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Evaluation of New Canal Point Sugarcane Clones

1991–92 Harvest Season

ABSTRACT

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Replicated experiments at 9 locations representing 6 soils (Lauderhill, Pahokee, Terra Ceia, and Torry mucks; Pompano fine sand, and Malabar sand) contained 28 new Canal Point (CP) clones of sugarcane (10 in the plant crop, 9 in the first-ratoon crop, and 9 in the second-ratoon crop). Seven locations had muck soils and two had sandy soils. Each first-ratoon and second-ratoon experiment included one additional new clone. The 25 experiments compared the cane and sugar yields of these clones, complex hybrids of *Saccharum* spp., with those yields of CP 70–1133. All experiments also contained CP 72–1210, which served as a second reference clone for sugar yields expressed as kilograms of sugar per metric ton of cane (KS/T). We assigned ratings to each clone for its reactions to sugarcane rust, *Puccinia melanocephala* H. Syd. and P. Syd., by natural infection, and to leaf scald, *Xanthomonas albilineans* (Ashby) Dow, and sugarcane smut, *Ustilago scitaminea* H. Syd., by natural infection and inoculation tests.

No clone in the plant crop yielded significantly more metric tons of sugar per hectare (TS/H) than CP 70–1133. However, CP 87–1274 had a TS/H yield similar to that of CP 70–1133. CP 87–1274 yielded significantly more KS/T and significantly less cane expressed as metric tons of cane per hectare (TC/H) than CP 70–1133. Except for CP 87–1274, the other clones from the CP 87 series had low KS/T yields.

In the first-ratoon experiments, CP 86–1664 yielded significantly more TC/H and TS/H than CP 70–1133. CP 86–1664 had KS/T yields similar to those of CP 72–1210 and CP 70–1133. CP 86–1633, a clone included in the tests only on muck soils, had TC/H, KS/T, and TS/H yields similar to those of CP 70–1133.

No clone in the second-ratoon experiments except CP 85–1382 yielded significantly more TS/H than CP 70–1133 on both the muck and sandy soils. Other strong points of CP 85–1382 included significantly higher KS/T yields than CP 70–1133, excellent tolerance to freezing temperatures, and the ability to often remain erect after burning. CP 85–1308 yielded significantly more TS/H than CP 70–1133 on sandy soils, and had TS/H yields comparable to those of CP 85–1382 and CP 70–1133 on muck soils. CP 85–1308 yielded significantly more KS/T than CP 70–1133 on both the muck and sandy soils. CP 85–1432 had TS/H yields comparable to those of CP 70–1133 on both soils. CP 85–1491 equaled the TS/H yield of CP 70–1133 on muck soils, and CP 85–1822 and CP 85–1823 equaled the TS/H yields of CP 70–1133 on sandy soils.

KEY WORDS: Florida, Lauderhill muck, leaf scald, *Leptodictya tabida*, Malabar sand, Pahokee muck, Pompano fine sand, *Puccinia melanocephala*, *Saccharum* spp., stability, stability-safety index, sugarcane cultivars, sugarcane lacebug, sugarcane rust, sugarcane smut, sugarcane varieties, sugarcane yields, sugar yields, Terra Ceia muck, Torry muck, *Ustilago scitaminea*, *Xanthomonas albilineans*.

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CONTENTS

EVALUATION OF NEW CANAL POINT SUGARCANE CLONES

1991–92 Harvest Season

B. Glaz, J.M. Shine, Jr., J.D. Miller, C.W. Deren, P.Y.P. Tai, J.C. Comstock, and O. Sosa, Jr.

Clonal selection at precommercial stages is one of the major components in the successful commercial production of sugarcane, complex hybrids of *Saccharum* spp. Although production of sugar per unit area is a very important characteristic, it is not the only factor on which cane is evaluated. In addition, analyses are made on the quantity of cane needed to produce a particular sugar yield and on the relative millability of the cane. The time of year and the duration that a clone yields its highest amount of sugar per unit area can be very important, since sugarcane harvest seasons extend from fall to spring. Because sugarcane is commercially grown in plant and ratoon crops, clones are evaluated accordingly. Information about the stability of a clone's performance across environments aids in selecting clones that will perform well across all environments. Stability measurements also enable identification of clones that will perform well only in specific environments. This stability factor is important in our evaluations because of the wide range of environments for growing sugarcane in Florida. Large temperature, moisture, soil, and other differences among environments compel us to identify location-specific clones because few clones do well in all environments.

Clones with the desired agronomic characteristics must also be productive in the presence of harmful diseases, insects, and weeds. Determination of pest resistance and tolerance can require up to several years to complete for pests that normally do not mutate to form new races at high rates. For pests that rapidly develop new, virulent races or strains, clones' susceptibility ratings often change over time. The selection team must try not to discard clones that have sufficient resistance or tolerance to pests, but it must also discard clones that are too susceptible to pests to be grown commercially. In recent years, many sugarcane-producing regions have had major pest attacks on extensively grown commercial clones. Glaz et al. (1986) presented a formula and procedure to reduce losses from future pests. Florida sugarcane growers and scientists have dealt with serious pests for more than a decade—the most prominent pests being sugarcane rust, *Puccinia melanocephala* H. Syd & P. Syd, and, to a lesser extent, sugarcane smut, *Ustilago scitaminea* H. Syd. Florida sugarcane growers can now add leaf scald, *Xanthomonas albilineans* (Ashby) Dow, to their list of major sugarcane diseases. An insect discovered in Florida in 1990, the sugarcane lacebug, *Leptodictya tabida* (Hall 1991), has selectively fed upon some clones.

Each year at Canal Point, FL, we evaluate approximately 100,000 seedlings from crosses derived from a diverse germplasm collection, although perhaps not a sufficiently diverse cytoplasmic base (Mangelsdorf 1983). This year most of the parental clones in our program originated from Canal Point. In addition, clones used as parents this season came from Clewiston, FL, Louisiana, and Texas, and from Australia, Barbados, Brazil, and Mexico. Also, we used several feral *Saccharum officinarum* and *Saccharum robustum* clones and interspecific hybrids of these clones as parents. The parents of three clones included in this report—CP 85–1207, CP 85–1308, and CP 86–1664—came from breeding programs in South Africa, Reunion, and Brazil, respectively.

We select about 1 percent of the 100,000 seedlings over a 2-year period at Canal Point. The first year we visually select about 10 percent, or 10,000 of the available seedlings, and clonally propagate them. The second year we visually select about 10 percent of these 10,000 clones. From these 1,000 selected clones, we select 131 for continued testing in replicated experiments for 2 years at 4 locations. Cane tonnage and sugar estimates calculated from stalk counts and juice samples, along with disease susceptibility serve as the primary selection criteria for the groups of 1,000 and 131 clones. The 10 most promising clones receive continued testing for 3 more years in the experiments reported here. Tai and Miller (1989) described this selection program in more detail. Clones that successfully complete these experimental phases undergo 2 to 4 years of evaluation and seed cane increase by the Florida Sugar Cane League, Inc., before commercial release. Some of this evaluation occurs concurrently with the evaluations described herein.

Until recently, the clone most widely grown in Florida served as the primary reference clone in these reports. This year that clone is CP 72–1210 (Glaz and Coale 1992).

Glaz is an agronomist, Miller and Tai are research geneticists, Comstock is a research plant pathologist, and Sosa is a research entomologist—all with the U.S. Department of Agriculture, Agricultural Research Service, U.S. Sugarcane Field Station, Star Route, Box 8, Canal Point, FL 33438. Shine is an agronomist with the Florida Sugar Cane League, Inc., P.O. Drawer 1208, Clewiston, FL 33440, and Deren is an associate professor in genetics with the Everglades Research and Education Center, Institute of Food and Agricultural Sciences, University of Florida, P.O. Box 8003, Belle Glade, FL 33430.

However, for the fifth consecutive year, CP 72–1210 has had low yields. Therefore, CP 70–1133, the second most widely grown clone in Florida (Glaz and Coale 1992), functions here as the primary reference clone. CP 72–1210 serves at times as a reference clone for sugar yields expressed as kilograms of sugar per metric ton of cane (KS/T).

Clones with characteristics that may be valuable for sugarcane breeding programs are identified throughout the selection process. Sugarcane breeders often seek clones with specific characteristics. From May 1991 to June 1992, Costa Rica, the Dominican Republic, El Salvador, France, Guatemala, Malaysia, Mauritius, Mexico, Nicaragua, Pakistan, Panama, the People's Republic of China, the Philippines, and Zimbabwe received clones or seeds from Canal Point. Alabama, California, Minnesota, Texas, Washington, and one other location in Florida also received Canal Point clones.

TEST PROCEDURES

In the 25 experiments, 28 new Canal Point (CP) clones (10 clones of the CP 87 series in the plant crop, 9 clones of the CP 86 series in the first-ratoon crop, and 9 clones of the CP 85 series in the second-ratoon crop) and the reference clones (CP 70–1133 and CP 72–1210) were sampled and harvested at 9 growers' farms (table l). In the first-ratoon experiments, one additional clone of the CP 86 series was sampled and harvested at the seven locations on muck soil, and one additional clone of the CP 85 series was sampled and harvested at one location on sandy soil. In the second-ratoon experiments, two additional clones of the CP 85 series were sampled and harvested—one at the muck locations and one at both sand locations.

CP 70–1133 was the primary reference clone, although CP 72–1210 was also included in all of the experiments. Plant-crop, first-ratoon, and second-ratoon experiments were conducted at each location except at the Lykes Brothers' Farm, which had no plant-crop and first-ratoon experiments. The plant-crop and first-ratoon experiments at A. Duda and Sons' Farm (southeast of Belle Glade) were conducted on Dania muck. As described by McCollum et al. (1976), Dania is the shallowest muck soil in south Florida. The other muck soils classified by depth (listed in order of increasing depth) are Lauderhill, Pahokee, and Terra Ceia mucks.

Six experiments were conducted on Lauderhill muck—the three experiments at Okeelanta Corp. (south of South Bay), the two ratoon experiments at Knight's Farm (southwest of 20-Mile Bend) in Palm Beach County, and the second-ratoon experiment at Duda.

Nine experiments were conducted on Pahokee muck. These included the six experiments at Wedgworth Farms (east of Belle Glade) and New Farm, Inc. (east of Canal Point). The plant-crop and second-ratoon experiments at South Florida Industries (near 20-Mile Bend) and the plant-crop experiment at Knight comprised the remaining three experiments on Pahokee muck. The only experiment conducted on Terra Ceia muck was the first-ratoon experiment at South Florida Industries. The three experiments at Eastgate (north of Belle Glade) were on Torry muck, the three experiments at Hilliard Brothers' Farm (west of Clewiston) were on Malabar sand, and the second-ratoon experiment at Lykes Brothers' Farm (near Moore Haven in Glades County) was on Pompano fine sand.

In all but 1 of the 25 experiments, clones were planted with 2 lines of seed cane per furrow. In the second-ratoon experiment at Lykes Brothers' Farm, clones were planted with about 1.25 lines of seed cane per furrow. Clones were planted in plots arranged in a randomized complete-block design with 4 replications. Each plot was 10.7 meters long and 6.1 meters wide (0.0065 hectare). The distance between rows was l.5 meters, and 1.5-meter alleys separated the front and back ends of the plots. The margins of the experiment were protected with an extra row of sugarcane on each side and an extra 1.5 meters of sugarcane in the front and back. Individual four-row plots were not protected.

Each clone was rated for its reaction to sugarcane smut, sugarcane rust, and leaf scald by natural infection. In addition, each clone was artificially inoculated with smut and leaf scald and later rated for its susceptibility in separate experiments.

The farm management at each location controlled sugarcane management practices, such as fertilization, cultivation, and pest control. Ten stalks were randomly sampled per plot from unburned cane in two of the four replications of each experiment between October 21 and 28, 1991. The stalks were milled, crusher juice was analyzed for Brix and sucrose, and indicated yields of 96° sugar (KS/T) were determined as a measure of early-season sugar production. To estimate the yield of sugar per hectare from these preharvest data, we assumed that the preharvest yield of cane per hectare was equal to the actual yield of cane per hectare obtained at harvest. The cane in all of the experiments was harvested between October 23, 1991, and March 19, 1992. The range of harvest dates for each crop was as follows: December 20, 1991, to March 18, 1992, for the plant crop; December 31, 1991, to March 17, 1992, for the first-ratoon crop; and October 23, 1991, to March 19, 1992, for the second-ratoon crop. After the plots were burned, the cane was cut and piled by hand and then weighed with a tractor-mounted weighing device. Fifteen stalks were

selected from each plot and transported to the Agricultural Research Service's laboratory at Canal Point for weighing, milling, and crusher-juice analysis. These stalks were randomly selected except that we selected only stalks that were representative in size of the vast majority of the stalks in the plot and that had no or slight damage.

In this report all values for yield of sugar per metric ton of cane and for yield of sugar per hectare are indicated (theoretical) yields. These yields were calculated according to a simplification of the Winter-Carp-Geerligs formula (Arceneaux 1935). An explanation of the formula was given previously (Rice and Hebert 1972). Varietal correction factors (VCF's) were used in all of the theoretical sugar calculations.

Analyses of variance were done using the procedures described by McIntosh (1983). F-ratios were chosen according to a mixed model, with treatments (clones) fixed and locations random. The source of variation that corresponded to the error term for the effect being tested was used to calculate the least significant difference (LSD). LSD was used regardless of significance of F-ratios in all analyses. Significant differences were sought at the 10-percent probability level.

Analyses of clonal stability across locations were done by using the procedures recommended in Shukla (1972). For each clone, the stability-variance parameters of Shukla were subsequently used to calculate a stability-safety index as described by Eskridge (1990). The mean yield of the clone and the stability of the clone across locations influence the value of this stability-safety index. The higher the stability-safety index, the more likely the clone is to have high yields at all locations.

RESULTS AND DISCUSSION

Table 1 lists the parentage, variety correction factor, percentage of fiber, and reactions to smut, rust, and leaf scald for each clone included in these experiments. Tables 2–6 contain the results of the plant-crop experiments. Tables 7–11 contain the results of the first-ratoon experiments. Tables 12–16 contain the results of the second-ratoon experiments on muck soils, and tables 17 and 18 contain the results of the second-ratoon experiments on sandy soils.

Plant Crop

CP 70–1133 first became a reference clone for the CP 78 series in 1982 (Glaz et al. 1983). Since that time, on the average in the plant-crop, it has ranked about ninth out of about 12 clones in yield of KS/T. Also, on the average, CP 70–1133 has had significantly greater KS/T yields than only one clone per series. This year the CP 87 series had the lowest KS/T yields as a group compared to all other series since CP 70–1133 became a reference clone. CP 70–1133 ranked third in KS/T this year and yielded significantly more KS/T than 5 of the 10 CP 87 clones (table 5). However, one clone from this series, CP 87–1274, yielded significantly more KS/T than CP 70–1133 and CP 72–1210.

CP 87–1274 yielded significantly less metric tons of cane per hectare (TC/H) than CP 70–1133 and five other clones tested in this series (table 2). However, CP 87–1274 had KS/T yields significantly greater than all other clones (table 5). CP 87–1274 and CP 70–1133 had about equal yields of metric tons of sugar per hectare (TS/H) (table 6). Since sugarcane growers prefer to obtain high TS/H yields through lower TC/H and higher KS/T yields, CP 87–1274 is a desirable new clone. CP 87–1274 had TS/H yields at least equal to those of CP 70–1133 at all locations except Knight, Eastgate, and Hilliard Brothers' farms. Due to low yields at these locations, we can initially classify CP 87–1274 as low yielding on wet muck (Knight), Torry muck (Eastgate), and sandy soils (Hilliard).

Prior to burning, CP 87–1274 maintained an erect growth habit at most locations. This may prove advantageous in fields that growers must harvest without burning. After burning, the clone became recumbent and appeared to offer no physical advantages for mechanical harvesting. CP 87–1274 had a normal fiber percentage and VCF level (table 1). So far, this clone has shown low levels of susceptibility to sugarcane rust and is resistant to leaf scald and smut. At most locations, CP 87–1274 showed no rust, and where rust occurred it was minor.

First-Ratoon Crop

Only one clone, CP 86–1664, had a TS/H yield significantly greater than that of CP 70–1133 (table 11). In addition, CP 86–1664 yielded significantly more TS/H than all other clones in this group. This clone also had a significantly greater TC/H yield than any other clone (table 7). The KS/T yield of CP 86–1664 did not significantly differ from that of CP 72–1210 nor from that of CP 70–1133 (table 10). CP 86–1664 also had high preharvest TS/H yields (table 9) even though its preharvest KS/T yields were not high (table 8). CP 86–1664 performed at least as well as CP 70–1133 at all locations and yielded significantly more TC/H and TS/H than CP 70–1133 at every location except New Farm and Hilliard Brothers' Farm (tables 7 and 11). The high stability-safety indices of CP 86–1664 in TC/H and TS/H further verify that it should yield well at most locations (tables 7 and 11). Last year in the plant crop CP 86–1664 performed as well as, but not significantly better than, CP 70–1133 (Glaz et al. 1991b).

For the combined plant-cane and first-ratoon crops, CP 86–1664 had significantly higher TC/H and TS/H yields than CP 70–1133 and all other clones at $P = 0.01$. The combined crop KS/T yield of CP 86–1664 approximated the KS/T yields of CP 70–1133 and CP 72–1210 (data not shown). CP 86–1664 has a recumbent growth habit before and after burning and would probably not offer any advantages for mechanical harvesting. In addition, it retains much leaf material, not making it a strong candidate for harvesting without burning beforehand. CP 86–1664 had a normal fiber percentage and VCF level (table 1). Sugarcane rust and smut have not yet infected CP 86–1664. However, the intermediate susceptibility of CP 86–1664 to leaf scald is of concern.

Only the experiments at the locations with muck soils included CP 86–1633. On these soils, CP 86–1633 performed comparably to CP 70–1133 in all harvest and preharvest characteristics (tables 7–11). CP 86–1633 had similar results last year except that it had outstanding preharvest TS/H yields at some locations (Glaz et al. 1991b). This year, CP 86–1633 had better than average, but not outstanding, preharvest TS/H yields at some locations (table 9). The level of smut in CP 86–1633 concerned us in the past (Glaz et al. 1991b). However, during the past year, smut, rust, or leaf scald did not cause major infections on CP 86–1633 (table 1). CP 86–1633 also had commercially acceptable VCF and fiber levels.

CP 86–1747 and CP 86–1952 had reasonable TC/H and TS/H yields last year in the plant crop (Glaz et al. 1991b) and this year (tables 7 and 11). However, both clones have had low KS/T yields (Glaz et al. 1991b and tables 8 and 10).

Second-Ratoon Crop—Muck Soils

Only CP 85–1382 yielded significantly more TS/H than CP 70–1133 (table 16). CP 85–1382 had a TC/H yield similar to that of CP 70–1133 (table 12) and a KS/T yield significantly greater than the KS/T yields of CP 70–1133 and CP 72–1210 (table 15). CP 85–1382 also had high preharvest KS/T and TS/H yields (tables 13 and 14). In previous years CP 85–1382 had excellent KS/T yields in the plant and first-ratoon crops (Glaz et al. 1991a and 1991b). It yielded significantly less TC/H than CP 70–1133 in the plant crop but significantly more in the first-ratoon crop. In the combined analyses of the plant through the second-ratoon crops, CP 85–1382 yielded significantly more KS/T than all other clones (data not shown). It also yielded more TS/H than all other clones and significantly more TS/H than all other clones except CP 85–1308.

CP 85–1308 had TC/H yields and harvest and preharvest KS/T and TS/H yields similar to those of CP 85–1382 (tables 12–16). However, CP 85–1308 yielded significantly more than CP 70–1133 only in KS/T (table 15). CP 85–1308 also yielded significantly more KS/T than CP 72–1210. Two years ago in the plant crop, CP 85–1308 had TC/H, KS/T, and TS/H yields similar to those of CP 70–1133 (Glaz et al. 1991a). Last year in the first-ratoon crop, CP 85–1308 yielded significantly more than CP 70–1133 in these three characteristics (Glaz et al. 1991b). In the combined analyses of the plant through second-ratoon crops, CP 85–1308 yielded significantly more KS/T and TS/H than CP 70–1133.

CP 85–1491 performed similarly this year compared to last year in the first-ratoon crop. This clone had TC/H, KS/T, and TS/H yields about equal to those of CP 70–1133 (tables 12–16 and Glaz et al. 1991b). In the plant crop, CP 85–1491 also had TC/H and TS/H yields similar to those of CP 70–1133. However, CP 85–1491 yielded significantly more KS/T than CP 70–1133 in the plant crop (Glaz et al. 1991a). All nine experiments underwent severe freezes before the plant-crop harvest; CP 85–1491 demonstrated more freeze tolerance than CP 70–1133. CP 85–1491 has also had stable and high yields across environments. This year, it had a higher stability-safety index than all other clones for TC/H and TS/H (tables 12 and 16). Thus, most sugarcane growers in south Florida with muck soils should obtain relatively high yields with CP 85–1491.

CP 85–1432 yielded less TS/H than CP 70–1133, although not significantly less (table 16). CP 85–1432 yielded significantly less TC/H than CP 70–1133 (table 12). Based on the high KS/T yield of CP 85–1432 for the past 2 years in the plant and first-ratoon crops, we felt that this clone excelled in this category (Glaz et al. 1991 a and b). However, CP 85–1432 did not repeat these high KS/T yields this year in the second-ratoon crop; its KS/T yield was similar to that of CP 70–1133 (table 15).

Second-Ratoon Crop—Sandy Soils

CP 85–1382 yielded more TC/H and TS/H than all other clones and significantly more KS/T and TS/H than CP 70–1133 (table 18). CP 85–1382 also yielded significantly more preharvest TS/H than CP 70–1133 (table 17). However, CP 85–1382 had extremely unstable TC/H and subsequently extremely unstable TS/H yields. At the Lykes Brothers' Farm, CP 85–1382 had TC/H yields significantly greater than those of any other clone. However, at the Hilliard Brothers' Farm, CP 85–1382 had TC/H and TS/H yields only about equal to those of CP 70–1133. In previous years in the plant and ratoon crops, CP 85–1382 had more stable but lower TC/H and TS/H yields (Glaz et al. 1991 a and b). For all three crops combined, CP 85–1382 yielded significantly more KS/T than CP 70–1133 but did not yield significantly more TC/H or TS/H than CP 70–1133 (data not shown).

CP 85–1308 had the highest TS/H yields for the three-crop cycle in this group and was the only clone to yield significantly more TS/H than CP 70–1133 (data not shown). In the second-ratoon crop, CP 85–1308 yielded significantly more TS/H and KS/T than CP 70–1133 and had high TC/H yields (table 18). In the previous two crops, CP 85–1308 yielded similarly; it had high TC/H, KS/T, and TS/H yields (Glaz et al. 1991 a and b).

Other high-yielding clones from these tests include CP 85–1432, CP 85–1822, and CP 85–1823. All three of these clones yielded about the same TS/H as CP 70–1133 over the three-crop cycle (data not shown) and in this crop (table 18). CP 85–1822 and CP 85–1823 had high and stable KS/T yields in the second-ratoon crop.

Second-Ratoon Crop—General Characteristics

CP 85–1382 has additional promising characteristics. After a severe freeze in the plant crop, it yielded much higher KS/T than the other clones (Glaz et al. 1991a). This suggested that CP 85–1382 had substantially more freeze tolerance than any other commercial-type clone in Florida. Also, CP 85–1382 often remains erect after burning. This characteristic, along with its good ratoon yields, may encourage growers to use it in mechanically harvested fields.

CP 85–1308, CP 85–1382, CP 85–1432, CP 85–1491, CP 85–1822, and CP 85–1823 had acceptable VCF's and fiber percentages (table 1). None of these clones have demonstrated too much susceptibility to any of the major diseases, but only CP 85–1491 has so far not displayed any smut, rust, or leaf scald infections under natural conditions. CP 85–1308, CP 85–1382, CP 85–1432, CP 85–1822, and CP 85–1823 have had minor rust infections at some locations. CP 85–1308, CP 85–1382, and CP 85–1822 have had some leaf scald infections under natural conditions; however, all three clones have had fewer infected stools than CP 72–1210 under similar natural conditions.

SUMMARY

In the plant-crop experiments, CP 87–1274 had a mean TS/H yield similar to that of CP 70–1133. CP 87–1274 had yields economically advantageous to growers because it achieved this high TS/H yield from low TC/H and high KS/T yields. Although not extremely unstable in its TS/H yields, CP 87–1274 showed signs of having low yields on wet muck, Torry muck, and sandy soils.

Data combined from the 1990–92 harvest seasons for the clones in the first-ratoon experiments indicated two promising new clones. CP 86–1664 had at least acceptable yields at all locations and had outstanding yields at some locations. In the combined plant and first-ratoon crops, CP 86–1664 produced more TC/H and TS/H than all other clones. It had KS/T yields similar to those of CP 70–1133 and CP 72–1210. We tested CP 86–1633 only on muck soils. Its 2-year mean yields of TC/H, KS/T, and TS/H approximated those of CP 70–1133.

Data combined from the 1989–92 harvest seasons for the clones in the second-ratoon experiments indicated six promising new clones. CP 85–1382 and CP 85–1308 had outstanding mean TC/H, KS/T, and TS/H yields. CP 85–1382 had the highest mean KS/T yield among these clones after a severe freeze in the plant crop. Also, CP 85–1382 often remains erect after burning—a trait that may persuade growers to test it in mechanically harvested fields. Both CP 85–1382 and CP 85–1308 had excellent yields throughout the three-crop cycle on muck and sandy soils. CP 85–1432 also yielded well throughout the three-crop cycle on both soil types. CP 85–1491 had excellent and stable yields on muck soils, and CP 85–1822 and CP 85–1823 yielded well on the sandy soils.

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Table 1.—Parentage, variety correction factor (VCF),[1] fiber content, and ratings for smut, rust, and leaf-scald susceptibility and for adaptability to mechanical harvesting of CP 70–1133, CP 72–1210, and 32 new sugarcane clones.

Clone	Parentage	VCF	Percent fiber	Rating[2] Smut	Rust	Leaf scald
CP 70–1133	[3]67 P 6 CP 56–63	0.980	10.37	R	R	R
CP 72–1210	CP 65–357 x CP 56–63	.965	10.04	R	S	I
CP 85–1207	CP 77–1055 x N 11	1.014	9.64	I	I	R
CP 85–1308[4]	R 567 x CP 74–2013	1.047	9.70	R	I	I
CP 85–1343	82 P 3 CP 75–1091	1.002	8.59	I	I	R
CP 85–1382[4]	82 P 14 CP 74–2005	1.053	9.86	R	I	I
CP 85–1432[5]	82 P 26 CP 70–1527	.960	10.94	I	I	R
CP 85–1471	CP 75–1091 x CP 63–588	.960	8.83	R	R	R
CP 85–1491[5]	CP 75–1553 x CP 72–2086	.998	10.68	R	R	R
CP 85–1498	CP 70–1133 x CP 77–1776	—	—	R	I	R
CP 85–1623	CP 65–357 x CP 75–1091	1.013	9.61	I	I	S
CP 85–1808	CP 65–357 x CP 74–2013	1.020	9.66	I	R	S
CP 85–1822	CP 75–1082 x CP 72–1210	.985	10.36	I	I	I
CP 85–1823	CP 75–1082 x CP 72–1210	1.010	9.78	I	I	R
CP 86–1180	CP 75–1082 x CP 72–2086	.967	11.03	R	I	R
CP 86–1427	CP 72–1210 x CP 63–588	1.018	9.00	R	I	R
CP 86–1633[4]	CP 75–1082 x CP 78–1140	.947	11.60	I	I	R
CP 86–1664[4]	CP 72–1210 x IAC 50–134	.967	9.61	R	R	I
CP 86–1705	CP 74–387 x CP 78–1140	.931	10.83	R	I	I
CP 86–1747	CP 65–357 x CP 65–357	.983	9.36	R	I	R
CP 86–1830	CP 65–357 x CP 78–1140	.978	9.60	R	I	R
CP 86–1882	CP 75–1091 x CP 72–2086	.941	11.83	I	I	R
CP 86–1952	CP 75–1322 x CP 78–1140	.951	11.19	R	R	R
CP 86–2024	CP 74–2005 x CP 75–1353	1.018	9.32	R	R	R
CP 87–1018	CP 79–1580 x CP 77–1055	.924	11.91	R	I	I
CP 87–1121	CP 80–1151 x CP 77–1008	.909	11.69	R	I	I
CP 87–1226	CP 78–1610 x CP 72–1210	.973	10.13	R	I	S
CP 87–1248	CP 78–1610 x CP 72–1210	.944	9.96	R	I	I
CP 87–1274[4]	CP 65–357 x CP 78–1701	.982	10.46	R	I	R
CP 87–1475	CP 80–1151 x CP 72–1210	.907	11.81	R	R	R
CP 87–1490	CP 78–1697 x CP 75–1632	.989	10.40	R	I	S
CP 87–1628	CP 79–1374 x CP 69–1052	.997	10.94	R	R	R
CP 87–1733	CP 79–1374 x CP 80–1161	1.025	9.65	R	R	S
CP 87–1737	CP 79–1374 x CP 80–1161	.963	10.32	R	R	I

[1]VCF used to calculate theoretical yield of 96° sugar per metric ton according to Arceneaux's simplification of the Winter-Carp-Geerligs formula.

[2]R = resistant enough for commercial production; S = too susceptible for production; I = intermediate susceptibility (available data not sufficiently persuasive to determine susceptibility).

[3]67 P 6 = 6th polycross made in 1967 crossing season. Female parent (CP 56–63) exposed to pollen from many clones; therefore, male parent of CP 70–1133 unknown. Similar explanations for CP 85–1343, CP 85–1382, and CP 85–1432.

[4]Seed cane currently being increased by Florida Sugar Cane League, Inc., for potential release.

[5]Scheduled for commercial release in Florida in fall of 1992.

Table 2.—Yields of cane, in metric tons per hectare, from plant cane on Dania, Lauderhill, Pahokee, and Torry mucks and on Malabar sand

	Mean yield by soil type, farm, and harvest date									
	Dania muck	Lauderhill muck	Pahokee muck				Torry muck	Malabar sand		
Clone	Duda 12/20/91	Okeelanta Corp. 1/26/92	Knight 2/11/92	Wedg-worth 2/13/92	New Farm 2/22/92	S. Fla. Ind. 3/5/92	Eastgate 3/18/92	Hilliard Bros. 1/3/92	Stabil-ity-safety index[1]	Mean yield, all farms
CP 87–1226	173.83	186.34	161.9	179.54	164.40	130.31	218.61	110.30	96.85	165.66
CP 87–1475	168.53	176.89	154.86	167.98	171.04	146.00	152.65	119.79	86.92	157.21
CP 87–1628	151.17	180.44	157.58	150.54	173.04	129.15	214.75	90.35	85.59	155.88
CP 70–1133	159.89	162.82	120.82	147.54	159.88	147.08	200.96	113.65	87.81	151.58
CP 87–1490	144.97	166.23	139.42	156.33	164.71	123.88	188.42	114.49	93.22	149.80
CP 87–1248	[2]145.79	161.67	133.36	126.31	164.97	119.58	189.74	117.23	84.19	144.83
CP 87–1121	149.38	136.86	154.70	137.39	163.20	131.79	167.63	109.51	80.29	143.80
CP 87–1018	150.65	153.34	138.79	126.10	161.16	123.08	165.20	77.19	73.86	136.94
CP 87–1737	141.73	141.62	122.79	142.07	127.34	114.51	168.73	120.80	69.18	134.95
CP 87–1274	128.28	147.83	107.52	129.15	158.71	125.81	164.21	107.82	72.27	133.66
CP 87–1733	139.52	149.49	[2]127.03	137.81	158.13	104.89	[2]154.06	91.97	74.08	132.86
CP 72–1210	100.68	124.89	108.84	110.93	136.23	126.19	143.70	95.86	51.03	118.41
Mean[3]	146.20	157.37	135.63	142.64	158.57	126.85	177.39	105.75	79.61	143.80
LSD (P=0.10)	10.55	7.48	15.45	11.33	16.54	11.59	21.02	12.60		10.79
C.V.[4] (%)	6.02	3.96	16.11	6.62	8.69	7.62	9.88	9.93		9.15

[1]Stability-safety index for each clone is calculated at $P = 0.10$ by Eskridge's method and use of Shukla's stability-variance parameter.

[2]Rat damage occurred in some plots.

[3]LSD for location means = 10.09 t/ha at $P = 0.10$.

[4]C.V. = coefficient of variation.

Table 3.—Indicated yields of 96° sugar, in kilograms per metric ton of cane, from preharvest samples of plant cane on Dania, Lauderhill, Pahokee, and Torry mucks and on Malabar sand

	Mean yield by soil type, farm, and sampling date									
	Dania muck	Lauderhill muck	Pahokee muck				Torry muck	Malabar sand		
Clone	Duda 10/21/91	Okeelanta Corp. 10/28/91	Wedgworth 10/21/91	Knight 10/24/91	New Farm 10/25/91	S. Fla. Ind. 10/25/91	Eastgate 10/22/91	Hilliard Bros. 10/21/91	Stability-safety index[1]	Mean yield, all farms
CP 87–1274	107.05	87.96	100.71	88.38	102.25	100.73	87.57	117.35	81.31	99.00
CP 70–1133	90.51	96.02	92.24	93.35	97.70	105.64	90.83	115.63	84.06	97.74
CP 87–1490	96.91	95.06	102.04	86.97	99.42	100.38	89.80	108.05	82.75	97.33
CP 72–1210	103.14	96.71	88.92	95.14	80.76	98.64	99.77	107.31	77.40	96.30
CP 87–1737	87.42	96.22	101.75	73.05	90.64	102.41	82.82	114.03	73.77	93.54
CP 87–1733	96.89	88.75	77.26	83.45	78.51	108.36	100.34	95.61	68.37	91.14
CP 87–1248	91.15	86.88	93.90	79.43	89.02	105.84	83.77	96.01	73.61	90.75
CP 87–1628	82.56	86.46	81.57	77.63	98.32	76.46	80.60	105.58	66.58	86.15
CP 87–1121	79.18	80.41	84.31	75.85	84.35	88.83	84.12	92.94	70.20	83.75
CP 87–1018	86.66	86.76	78.03	77.25	83.54	86.70	70.38	99.32	68.51	83.58
CP 87–1226	72.08	78.87	67.39	76.02	80.38	88.91	91.27	109.73	62.60	83.08
CP 87–1475	75.24	75.27	65.22	74.75	78.10	77.20	84.05	100.23	61.79	78.76
Mean[2]	89.06	87.95	86.11	81.77	88.58	95.01	87.11	105.15	72.58	90.09
LSD (P=0.10)	8.51	15.30	20.59	11.94	18.96	13.23	20.28	10.52		5.87
C.V.[3] (%)	5.32	9.69	13.31	8.13	11.92	7.75	12.97	5.57		9.60

[1]Stability-safety index for each clone is calculated at P = 0.10 by Eskridge's method and use of Shukla's stability-variance parameter.
[2]LSD for location means = 5.60 kg of sugar per metric ton of cane at P = 0.10.
[3]C.V. = coefficient of variation.

Table 4.—Indicated yields of 96° sugar, in metric tons per hectare, from preharvest samples of plant cane on Dania, Lauderhill, Pahokee, and Torry mucks and on Malabar sand

	Mean yield by soil type, farm, and sampling date[1]									
	Dania muck	Lauderhill muck	Pahokee muck				Torry muck	Malabar sand		
Clone	Duda 10/21/91	Okeelanta Corp. 10/28/91	Wedgworth 10/21/91	Knight 10/24/91	New Farm 10/25/91	S. Fla Ind. 10/25/91	Eastgate 10/22/91	Hilliard Bros. 10/21/91	Stability-safety index[2]	Mean yield, all farms
CP 70–1133	13.996	14.973	12.859	11.723	15.302	16.840	17.984	12.471	11.024	14.519
CP 87–1490	14.022	15.755	14.720	12.229	16.843	12.902	16.698	11.349	11.084	14.315
CP 87–1248	14.069	13.764	12.522	12.879	13.758	14.011	16.707	10.783	10.613	13.562
CP 87–1226	12.418	14.736	11.694	13.901	13.578	12.127	17.822	11.334	9.750	13.451
CP 87–1274	13.438	13.065	12.580	8.965	16.535	13.748	14.238	12.191	9.021	13.095
CP 87–1628	12.355	14.956	12.465	13.753	14.491	10.867	17.108	8.521	8.929	13.065
CP 87–1475	12.403	13.373	10.847	11.856	14.194	12.192	13.466	12.498	9.100	12.604
CP 87–1737	11.973	13.824	14.696	8.548	12.021	12.723	13.837	12.926	7.801	12.569
CP 87–1733	13.620	13.522	11.032	9.167	13.609	11.477	16.557	8.700	8.683	12.211
CP 87–1121	12.245	10.743	11.421	12.226	14.196	12.407	14.466	9.559	8.771	12.158
CP 72–1210	10.480	12.131	9.652	10.881	11.607	13.122	15.430	9.807	8.182	11.639
CP 87–1018	13.467	13.482	10.091	10.789	13.764	11.862	11.147	6.368	6.884	11.371
Mean[3]	12.874	13.694	12.048	11.410	14.158	12.857	15.455	10.542	9.154	12.880
LSD (P=0.10)	1.584	2.602	3.430	2.529	3.409	3.009	3.893	1.916		1.184
C.V.[4]	6.85	10.58	15.85	12.34	13.41	13.03	14.84	10.12		12.67

[1]Yields based on early sucrose analysis, assuming that early cane yields are equal to actual yields at harvest.
[2]Stability-safety index for each clone is calculated at $P = 0.10$ by Eskridge's method and use of Shukla's stability-variance parameter.
[3]LSD for location means = 2.065 t/ha at $P = 0.10$.
[4]C.V. = coefficient of variation.

Table 5.—Indicated yields of 96° sugar, in kilograms per metric ton of cane, from plant cane on Dania, Lauderhill, Pahokee, and Torry mucks and on Malabar sand

Clone	Mean yield by soil type, farm, and harvest date								Stability-safety index[1]	Mean yield, all farms
	Dania muck	Lauderhill muck	Pahokee muck				Torry muck	Malabar sand		
	Duda 12/20/91	Okeelanta Corp. 1/26/92	Knight 2/11/92	Wedgworth 2/13/92	New Farm 2/22/92	S. Fla. Ind. 3/5/92	Eastgate 3/18/92	Hilliard Bros. 1/3/92		
CP 87–1274	115.17	117.68	109.35	113.48	111.07	118.09	107.35	116.02	86.27	113.53
CP 72–1210	99.42	109.49	105.74	102.75	108.76	99.49	104.43	127.84	86.41	107.24
CP 70–1133	88.85	104.09	108.91	88.56	107.86	96.81	95.89	120.75	75.34	101.46
CP 87–1733	96.85	101.92	95.69	99.47	94.00	102.00	93.73	120.40	79.18	100.51
CP 87–1490	98.16	97.10	92.14	94.28	97.75	100.83	100.19	116.84	80.35	99.66
CP 87–1628	92.54	92.26	92.86	92.76	96.66	102.11	97.01	119.40	79.06	98.20
CP 87–1737	85.83	93.09	92.09	97.08	109.42	101.23	95.67	110.87	75.47	98.16
CP 87–1248	83.26	91.69	90.50	95.36	94.24	101.60	98.32	109.77	75.20	95.59
CP 87–1121	84.89	92.19	93.28	93.03	94.21	91.71	78.38	104.84	67.92	91.57
CP 87–1018	79.54	81.62	88.48	85.07	88.63	86.76	95.86	101.93	67.63	88.48
CP 87–1475	83.53	79.89	77.29	75.22	90.34	89.70	99.37	104.34	61.54	87.46
CP 87–1226	74.78	75.44	84.79	82.90	82.20	84.79	89.67	114.68	61.45	86.16
Mean[2]	90.23	94.70	94.26	93.33	97.93	97.93	96.32	113.97	74.65	97.33
LSD (P=0.10)	10.82	7.86	12.22	5.56	10.47	7.85	8.78	8.42		4.60
C.V.[3]	9.99	6.92	10.80	4.96	8.71	6.68	7.60	6.16		7.89

[1]Stability-safety index for each clone is calculated at $P = 0.10$ by Eskridge's method and use of Shukla's stability-variance parameter.
[2]LSD for location means = 3.57 kg of sugar per metric ton of cane at $P = 0.10$.
[3]C.V. = coefficient of variation.

Table 6.—Indicated yields of 96° sugar, in metric tons per hectare, from plant cane on Dania, Lauderhill, Pahokee, and Torry mucks and on Malabar sand

Clone	Mean yield by soil type, farm, and harvest date								Stability-safety index[1]	Mean yield, all farms
	Dania muck	Lauderhill muck	Pahokee muck				Torry muck	Malabar sand		
	Duda 12/20/91	Okeelanta Corp. 1/26/92	Knight 2/11/92	Wedgworth 2/13/92	New Farm 2/22/92	S. Fla. Ind. 3/5/92	Eastgate 3/18/92	Hilliard Bros. 1/3/92		
CP 70–1133	14.219	16.958	13.187	13.080	17.228	14.323	19.203	13.687	10.370	15.236
CP 87–1274	14.779	17.372	11.983	14.637	17.634	14.807	17.638	12.420	9.814	15.159
CP 87–1628	13.970	16.613	15.077	13.984	16.609	13.237	20.815	10.803	9.267	15.139
CP 87–1490	14.232	16.150	12.856	14.743	16.045	12.515	18.821	13.361	10.223	14.840
CP 87–1226	13.004	14.053	13.803	14.873	13.513	11.062	19.613	12.680	8.012	14.075
CP 87–1248	12.241	14.829	12.205	12.032	15.574	12.126	18.682	12.881	8.847	13.821
CP 87–1475	14.078	14.161	11.942	12.678	15.475	13.135	15.145	12.473	8.631	13.636
CP 87–1737	12.169	13.198	11.384	13.789	13.922	11.615	16.139	13.362	8.027	13.197
CP 87–1733	13.492	15.272	12.168	13.742	14.825	10.670	14.309	11.092	7.852	13.196
CP 87–1121	12.692	12.613	14.429	12.771	15.425	12.109	13.093	11.439	6.784	13.071
CP 72–1210	10.041	13.655	11.515	11.374	14.723	12.529	14.939	12.209	7.371	12.623
CP 87–1018	12.031	12.479	12.270	10.779	14.255	10.711	15.860	7.845	6.675	12.029
Mean[2]	13.079	14.779	12.735	13.207	15.436	12.403	17.021	12.021	8.489	13.835
LSD (P=0.10)	1.825	1.464	3.484	1.407	1.821	1.458	2.169	1.581		1.020
C.V.[3]	11.63	8.25	22.80	8.88	9.83	9.79	10.62	10.96		12.09

[1]Stability-safety index for each clone is calculated at $P = 0.10$ by Eskridge's method and use of Shukla's stability-variance parameter.

[2]LSD for location means = 1.201 t/ha at $P = 0.10$.

[3]C.V. = coefficient of variation.

Table 7.—Yields of cane, in metric tons per hectare, from first-ratoon cane on Dania, Lauderhill, Pahokee, Terra Ceia, and Torry mucks and on Malabar sand

	Mean yield by soil type, farm, and harvest date									
	Dania muck	Lauderhill muck		Pahokee muck		Terra Ceia muck	Torry muck	Malabar sand		
Clone	Duda 3/16/92	Knight 12/31/91	Okeelanta Corp. 1/13/92	Wedgworth 2/13/92	New Farm 3/18/92	S. Fla. Ind. 2/19/92	Eastgate 3/19/92	Hilliard 1/3/92	Stability-safety index[1]	Mean yield, all farms
CP 86–1664	151.58	172.11	161.79	175.97	119.82	146.99	153.97	94.27	92.69	147.06
CP 86–1747	132.36	148.60	137.17	108.76	132.38	136.34	137.12	104.65	84.74	129.67
CP 70–1133	129.42	92.91	124.74	141.60	107.45	130.90	136.20	108.76	66.55	121.50
CP 86–1952	130.39	133.15	116.40	114.26	110.97	110.84	132.93	80.04	79.66	116.12
CP 86–1705	119.35	122.74	122.20	107.81	106.29	111.46	122.24	97.61	80.91	113.71
CP 86–1882	119.65	120.05	104.84	111.86	94.72	105.95	117.48	79.24	76.07	106.72
CP 86–1830	127.19	125.99	114.90	101.35	92.08	104.64	115.39	70.10	68.99	106.45
CP 86–1427	105.55	114.04	115.47	102.64	106.66	[2]104.28	105.12	84.10	69.77	104.73
CP 72–1210	118.29	103.65	102.74	101.91	88.06	93.89	113.63	78.05	67.13	100.03
CP 86–1180	104.76	107.55	95.77	122.83	76.50	111.00	109.63	67.48	58.92	99.44
CP 86–2024	[2]80.09	[2]91.98	106.72	105.74	[2]72.80	[2]77.19	[2]71.14	90.53	30.83	87.02
CP 86–1633	128.44	134.11	124.44	116.91	105.59	110.00	136.79			122.32
CP 85–1471								44.76		44.76
Mean[3]	120.59	122.24	118.93	117.64	101.11	111.96	120.97	83.30	70.57	112.04
LSD (P=0.10)	10.76	10.73	11.98	13.54	15.87	12.21	14.45	16.45		9.84
C.V.[4]	7.43	7.32	8.40	9.59	13.08	9.09	9.96	16.46		10.06

[1]Stability-safety index for each clone is calculated at P = 0.10 by Eskridge's method and use of Shukla's stability-variance parameter.

[2]Rat damage occurred in some plots.

[3]LSD for location means = 6.31 t/ha at P = 0.10

[4]C.V. = coefficient of variation.

Table 8.—Indicated yields of 96° sugar, in kilograms per metric ton of cane, from preharvest samples of first-ratoon cane on Dania, Lauderhill, Pahokee, Terra Ceia, and Torry mucks and on Malabar sand

Clone	Mean yield by soil type, farm, and sampling date								Stability-safety index[1]	Mean yield, all farms
	Dania muck	Lauderhill muck		Pahokee muck		Terra Ceia muck	Torry muck	Malabar sand		
	Duda 10/21/91	Knight 10/24/91	Okeelanta Corp. 10/28/91	Wedgworth 10/21/91	New Farm 10/25/91	S. Fla. Ind. 10/25/91	Eastgate 10/22/91	Hilliard 10/21/91		
CP 86–2024	108.13	101.17	131.73	96.22	114.81	113.39	101.43	122.98	94.00	109.32
CP 86–1882	104.45	109.31	120.14	114.31	104.75	116.99	100.71	114.04	94.47	108.79
CP 86–1180	80.01	105.80	108.52	100.45	113.79	113.73	101.35	117.11	82.15	102.54
CP 70–1133	99.90	113.13	110.43	99.72	106.45	95.82	95.63	105.00	83.01	101.01
CP 86–1427	97.68	84.97	113.52	96.06	118.16	102.02	93.21	118.98	82.98	100.84
CP 86–1952	105.00	99.07	103.55	95.20	96.53	104.63	92.39	105.10	83.93	98.38
CP 72–1210	98.13	90.68	115.19	93.08	104.35	95.39	90.70	112.72	84.50	98.30
CP 86–1664	89.75	93.22	119.13	101.16	104.52	113.09	73.02	110.17	79.47	98.17
CP 86–1830	100.80	94.86	109.15	99.58	93.62	107.66	85.04	104.91	84.02	97.73
CP 86–1705	99.55	90.52	111.13	93.35	98.43	99.35	91.44	108.01	85.14	97.43
CP 86–1747	96.89	85.95	93.30	81.38	82.76	110.37	80.26	110.92	70.69	90.28
CP 86–1633	99.68	105.98	107.69	88.81	110.79	119.79	96.65			104.20
CP 85–1471								107.15		107.15
Mean[2]	98.33	97.89	111.95	96.61	104.08	107.68	91.82	111.42	84.03	100.25
LSD (P=0.10)	10.59	19.77	15.53	8.09	15.48	10.06	13.96	15.96		6.02
C.V.[3]	6.00	11.28	7.73	4.67	8.28	5.20	8.46	7.97		7.90

[1]Stability-safety index for each clone is calculated at P = 0.10 by Eskridge's method and use of Shukla's stability-variance parameter.
[2]LSD for location means = 3.84 kg of sugar per metric ton of cane at P = 0.10.
[3]C.V. = coefficient of variation.

Table 9.—Indicated yields of 96° sugar, in metric tons per hectare, from preharvest samples of first-ratoon cane on Dania, Lauderhill, Pahokee, Terra Ceia, and Torry mucks and on Malabar sand

Clone	Mean yield by soil type, farm, and sampling date[1]								Stability-safety index[2]	Mean yield, all farms
	Dania muck	Lauderhill muck		Pahokee muck		Terra Ceia muck	Torry muck	Malabar sand		
	Duda 10/21/91	Knight 10/24/91	Okeelanta Corp. 10/28/91	Wedgworth 10/21/91	New Farm 10/25/91	S. Fla. Ind. 10/25/91	Eastgate 10/22/91	Hilliard 10/21/91		
CP 86–1664	13.708	15.806	19.285	18.724	10.835	17.281	10.068	11.079	8.842	14.598
CP 70–1133	12.312	10.225	13.925	14.482	11.406	13.243	12.700	11.808	9.683	12.513
CP 86–1882	13.080	13.188	12.358	12.819	10.978	12.630	11.987	9.442	9.965	12.060
CP 86–1747	12.357	12.293	13.090	9.347	10.438	15.821	10.689	11.356	8.362	11.924
CP 86–1952	13.819	12.925	10.910	10.824	10.182	12.479	11.976	9.492	8.578	11.576
CP 86–1705	11.616	11.815	12.878	10.816	11.616	11.033	10.916	10.688	9.207	11.422
CP 86–1830	13.620	11.803	12.580	10.105	8.994	12.027	10.107	7.320	7.865	10.820
CP 86–1427	10.562	10.322	11.879	10.219	12.289	11.046	10.465	8.405	7.947	10.648
CP 86–1180	8.312	11.591	9.718	12.778	9.574	12.693	11.528	7.697	6.675	10.486
CP 86–2024	9.377	9.004	14.296	11.346	8.368	9.415	6.873	12.625	5.347	10.163
CP 72–1210	11.682	9.429	11.485	9.321	10.160	9.519	10.119	8.616	7.516	10.041
CP 86–1633	13.067	14.043	13.029	11.195	12.256	14.623	13.722			12.133
CP 85–1471								5.128		10.820
Mean[3]	11.959	11.870	12.953	11.831	10.591	12.651	10.929	9.471	8.181	11.477
LSD (P=0.10)	1.214	2.865	3.649	2.284	1.930	2.429	2.976	3.096		1.397
C.V.[4]	5.65	13.49	15.69	10.75	10.15	10.69	15.16	18.20		13.10

[1]Yields based on early sucrose analysis, assuming that early cane yields are equal to actual yields at harvest.
[2]Stability-safety index for each clone is calculated at P = 0.10 by Eskridge's method and use of Shukla's stability-variance parameter.
[3]LSD for location means = 1.263 t/ha at P = 0.10.
[4]C.V. = coefficient of variation.

Table 10.—Indicated yields of 96° sugar, in kilograms per metric ton of cane, from first-ratoon cane on Dania, Lauderhill, Pahokee, Terra Ceia, and Torry mucks and on Malabar sand

Clone	Mean yield by soil type, farm, and harvest date: Dania muck	Lauderhill muck		Pahokee muck		Terra Ceia muck	Torry muck	Malabar sand	Stability-safety index[1]	Mean yield, all farms
	Duda 3/16/92	Knight 12/31/91	Okeelanta Corp. 1/13/92	Wedgworth 2/13/92	New Farm 3/18/92	S. Fla. Ind. 2/19/92	Eastgate 3/19/92	Hilliard 1/3/92		
CP 86–2024	121.53	120.18	128.07	118.19	112.54	135.74	116.09	131.14	100.23	122.93
CP 86–1427	128.64	108.36	114.78	113.14	119.44	120.53	105.37	124.27	98.88	116.82
CP 86–1882	122.33	108.94	114.70	108.70	115.66	116.78	113.52	127.67	100.22	116.04
CP 86–1180	109.96	117.33	112.85	103.17	121.56	123.82	104.32	124.18	92.32	114.65
CP 72–1210	123.45	109.68	96.53	109.09	117.51	115.45	116.33	117.24	90.18	113.16
CP 86–1664	120.98	104.60	109.58	104.34	112.57	119.44	113.39	119.86	98.39	113.09
CP 86–1705	118.54	101.71	104.29	107.53	118.11	118.47	110.28	118.82	95.31	112.22
CP 86–1830	116.41	107.10	110.11	108.73	108.79	123.07	110.83	108.18	92.55	111.65
CP 70–1133	117.54	112.43	110.96	98.08	109.97	114.29	102.47	116.99	93.25	110.34
CP 86–1952	114.70	100.24	101.91	105.51	108.64	111.57	104.89	109.38	91.17	107.10
CP 86–1747	114.72	100.27	108.66	85.08	104.01	114.09	102.18	116.62	84.41	105.70
CP 86–1633	119.74	105.96	109.68	106.09	118.75	110.51	111.14			111.69
CP 85–1471								127.05		127.05
Mean[2]	119.04	108.07	110.18	105.64	113.96	118.65	109.23	120.12	94.26	113.06
LSD (P=0.10)	10.32	7.85	13.20	6.24	8.99	7.53	10.60	19.05		4.27
C.V.[3]	7.23	6.05	9.98	4.92	6.57	5.29	8.09	13.22		8.50

[1]Stability-safety index for each clone is calculated at $P = 0.10$ by Eskridge's method and use of Shukla's stability-variance parameter.
[2]LSD for location means = 4.36 kg of sugar per metric ton of cane at $P = 0.10$.
[3]C.V. = coefficient of variation.

Table 11.—Indicated yields of 96° sugar, in metric tons per hectare, from first-ratoon cane on Dania, Lauderhill, Pahokee, Terra Ceia, and Torry mucks and on Malabar sand

Clone	Mean yield by soil type, farm, and harvest date								Stability-safety index[1]	Mean yield, all farms
	Dania muck	Lauderhill muck		Pahokee muck		Terra Ceia muck	Torry muck	Malabar sand		
	Duda 3/16/92	Knight 12/31/91	Okeelanta Corp. 1/13/92	Wedgworth 2/13/92	New Farm 3/18/92	S. Fla. Ind. 2/19/92	Eastgate 3/19/92	Hilliard 1/3/92		
CP 86–1664	18.358	17.979	17.759	18.344	13.450	17.554	17.432	11.259	11.160	16.517
CP 86–1747	15.159	14.905	14.888	9.250	13.716	15.564	13.990	12.207	8.010	13.710
CP 70–1133	15.204	10.571	13.784	13.858	11.822	14.913	14.008	12.722	8.561	13.360
CP 86–1705	14.146	12.487	12.738	11.606	12.542	13.216	13.487	11.604	9.370	12.728
CP 86–1952	14.970	13.336	11.849	12.037	12.089	12.372	13.927	8.719	8.557	12.412
CP 86–1882	14.647	13.064	12.015	12.156	10.970	12.345	13.282	10.198	9.313	12.335
CP 86–1427	13.536	12.266	13.276	11.632	12.757	12.565	11.122	10.555	8.453	12.214
CP 86–1830	14.755	13.483	12.657	11.030	10.053	12.879	12.743	7.591	7.835	11.899
CP 72–1210	14.605	11.360	10.186	11.147	10.364	10.808	13.164	9.159	7.194	11.349
CP 86–1180	11.563	12.637	10.879	12.645	9.297	13.746	11.381	8.380	7.015	11.316
CP 86–2024	9.660	11.028	13.697	12.468	8.296	10.565	8.328	11.900	3.569	10.743
CP 86–1633	15.378	14.203	13.614	12.410	12.574	12.115	15.254			13.650
CP 85–1471								5.700		5.700
Mean[2]	14.332	13.110	13.112	12.382	11.494	13.220	13.177	10.000	8.094	12.598
LSD (P=0.10)	1.463	1.624	1.980	1.637	1.953	1.867	2.086	2.520		1.188
C.V.[3]	8.51	10.32	12.59	11.02	14.16	11.77	13.19	21.00		12.84

[1]Stability-safety index for each clone is calculated at $P = 0.10$ by Eskridge's method and use of Shukla's stability-variance parameter.
[2]LSD for location means = 0.791 t/ha at $P = 0.10$.
[3]C.V. = coefficient of variation.

Table 12.—Yields of cane, in metric tons per hectare, from second-ratoon cane on Lauderhill, Pahokee, and Torry mucks

Clone	Mean yield by soil type, farm, and harvest date							Stability-safety index[1]	Mean yield, all farms
	Lauderhill muck			Pahokee muck			Torry muck		
	Okeelanta Corp. 11/1/91	Knight 11/25/91	Duda 12/26/91	New Farm 10/23/91	South Fla. Ind. 11/9/91	Wedgworth 2/12/92	Eastgate 3/19/92		
CP 85–1491	107.99	95.56	137.04	111.84	102.82	119.35	132.87	72.35	115.35
CP 85–1308	110.75	101.10	134.50	81.87	110.88	115.37	147.42	59.84	114.55
CP 85–1207	98.32	100.19	145.81	99.48	107.05	121.90	123.27	67.75	113.72
CP 85–1382	117.16	87.81	149.67	81.65	93.40	132.78	130.98	61.33	113.35
CP 70–1133	105.20	[2]70.43	150.62	92.30	114.66	129.20	127.01	57.00	112.77
CP 85–1822	95.96	86.09	117.38	101.82	91.74	110.89	112.39	57.04	102.32
CP 85–1432	92.38	95.66	134.87	87.22	64.64	112.94	127.68	47.80	102.20
CP 85–1623	97.02	86.62	129.31	93.50	88.94	112.90	105.50	58.25	101.97
CP 85–1498	100.48	79.41	123.07	95.52	83.35	111.61	110.77	57.97	100.60
CP 85–1808	99.76	[2]67.79	112.64	74.60	82.02	92.12	100.59	44.52	89.93
CP 72–1210	83.64	67.50	109.01	91.89	71.16	92.45	94.78	40.94	87.20
CP 85–1343	87.72	59.80	89.70	82.81	57.82	86.09	99.22	30.00	80.45
Mean[3]	99.70	83.16	127.80	91.21	89.04	111.47	117.71	54.56	102.87
LSD (P=0.10)	8.62	13.98	15.61	13.13	10.87	11.49	12.52		8.59
C.V.[4]	7.21	14.01	10.18	12.00	10.17	8.59	8.87		10.12

[1]Stability-safety index for each clone is calculated at P = 0.10 by Eskridge's method and use of Shukla's stability-variance parameter.

[2]Rat damage occurred in some plots.

[3]LSD for location means = 5.93 t/ha at P = 0.10.

[4]C.V. = coefficient of variation.

Table 13.—Indicated yields of 96° sugar, in kilograms per metric ton of cane, from preharvest samples of second-ratoon cane on Lauderhill, Pahokee, and Torry mucks

Clone	Mean yield by soil type, farm, and sample date							Stability-safety index[1]	Mean yield, all farms
	Lauderhill muck			Pahokee muck			Torry muck		
	Duda 10/21/91	Knight 10/24/91	Okeelanta Corp. 10/28/91	Wedgworth 10/21/91	New Farm 10/25/91	South Fla. Ind. 10/25/91	Eastgate 10/22/91		
CP 85–1623	113.67	106.37	122.20	115.54	109.60	118.83	111.38	96.02	113.94
CP 85–1808	109.44	114.57	115.43	116.21	109.92	126.58	86.57	90.23	111.24
CP 85–1382	112.56	109.84	120.49	115.03	103.11	114.26	96.92	94.27	110.31
CP 85–1498	104.27	105.28	117.68	108.02	113.87	119.91	95.71	92.05	109.25
CP 85–1308	104.39	94.66	128.89	111.04	106.89	114.24	99.32	88.87	108.49
CP 85–1343	100.81	104.09	139.86	113.45	83.73	113.89	92.67	80.05	106.93
CP 85–1822	105.26	120.44	123.42	97.13	100.95	111.06	90.15	87.18	106.91
CP 72–1210	99.53	99.55	125.46	97.80	97.94	105.10	106.61	83.79	104.57
CP 70–1133	97.77	121.02	109.34	101.53	90.16	114.69	96.85	82.17	104.48
CP 85–1432	103.82	112.78	117.95	96.29	101.02	110.09	88.90	87.55	104.40
CP 85–1207	105.73	98.59	109.50	96.79	105.91	116.73	93.17	85.44	103.77
CP 85–1491	98.86	101.88	116.36	98.95	101.18	116.80	88.91	87.95	103.27
Mean[2]	104.67	107.42	120.55	105.65	102.02	115.18	95.60	87.97	107.30
LSD (P=0.10)	17.00	19.17	22.83	18.25	10.75	19.54	13.66		6.46
C.V.[3]	9.04	9.94	10.54	9.62	5.87	9.45	7.96		9.19

[1]Stability-safety index for each clone is calculated at $P = 0.10$ by Eskridge's method and use of Shukla's stability-variance parameter.
[2]LSD for location means = 7.63 kg of sugar per metric ton of cane at $P = 0.10$.
[3]C.V. = coefficient of variation.

Table 14.—Indicated yields of 96° sugar, in metric tons per hectare, from preharvest samples of second-ratoon cane on Lauderhill, Pahokee, and Torry mucks

	Mean yield by soil type, farm, and sample date[1]								
	Lauderhill muck			Pahokee muck			Torry muck		
Clone	Duda 10/21/91	Knight 10/24/91	Okeelanta Corp. 10/28/91	Wedgworth 10/21/91	New Farm 10/25/91	South Fla. Ind. 10/25/91	Eastgate 10/22/91	Stability-safety index[2]	Mean yield, all farms
CP 85–1382	16.375	10.166	13.990	15.192	7.363	11.197	12.551	8.237	12.405
CP 85–1308	12.907	10.439	12.884	13.492	7.826	12.686	14.766	8.000	12.143
CP 85–1491	12.638	10.367	12.435	12.298	11.629	12.624	11.539	8.479	11.933
CP 85–1623	15.616	9.954	11.249	13.612	9.343	11.444	11.059	8.625	11.754
CP 85–1207	16.215	9.250	10.549	11.498	10.556	12.302	10.970	7.793	11.620
CP 70–1133	13.662	9.688	11.148	13.836	7.535	12.738	12.577	7.925	11.598
CP 85–1498	12.829	8.990	11.443	13.006	10.949	10.568	9.525	7.599	11.044
CP 85–1822	12.777	10.301	11.683	11.225	10.299	10.508	8.976	7.420	10.824
CP 85–1432	14.122	10.990	10.333	10.258	8.211	6.875	11.542	5.931	10.333
CP 85–1808	13.490	8.296	11.397	11.013	7.707	11.464	8.424	6.892	10.256
CP 72–1210	11.216	8.052	10.625	8.975	8.849	7.985	10.417	6.052	9.446
CP 85–1343	9.533	6.756	12.206	9.516	6.607	6.924	9.115	4.761	8.665
Mean[3]	13.448	9.437	11.662	11.993	8.906	10.610	10.955	7.309	11.002
LSD (P=0.10)	3.536	3.440	2.324	2.525	2.650	1.691	2.962		1.249
C.V.[4]	14.64	20.29	11.10	11.72	16.57	8.88	15.06		14.16

[1]Yields based on early sucrose analysis, assuming that early cane yields are equal to actual yields at harvest.
[2]Stability-safety index for each clone is calculated at P = 0.10 by Eskridge's method and use of Shukla's stability-variance parameter.
[3]LSD for location means = 1.095 t/ha at P = 0.10.
[4]C.V. = coefficient of variation.

Table 15.—Indicated yields of 96° sugar, in kilograms per metric ton of cane, from second-ratoon cane on Lauderhill, Pahokee, and Torry mucks

	Mean yield by soil type, farm, and harvest date								
	Lauderhill muck			Pahokee muck			Torry muck		
Clone	Okeelanta Corp.[1] 11/1/91	Knight[1] 11/25/91	Duda 12/26/91	New Farm 10/23/91	South Fla. Ind.[1] 11/9/91	Wedgworth 2/12/92	Eastgate 3/19/92	Stability-safety index[2]	Mean yield, all farms
CP 85–1382	126.46	117.54	110.76	108.06	131.07	122.85	122.84	92.70	119.94
CP 85–1808	117.74	129.44	104.21	108.48	133.49	122.21	115.49	91.09	118.72
CP 85–1623	127.17	129.36	106.45	106.81	130.93	115.50	111.10	92.14	118.19
CP 85–1308	124.09	125.99	105.50	109.12	129.64	112.56	116.52	92.56	117.63
CP 85–1822	119.90	124.34	95.87	104.38	131.24	118.82	112.97	88.43	115.36
CP 85–1498	121.60	123.72	102.68	110.68	124.19	106.99	109.00	86.20	114.12
CP 85–1432	118.87	120.24	101.32	100.17	125.42	119.75	111.24	87.84	113.86
CP 72–1210	121.51	114.02	102.20	100.11	120.85	110.80	115.27	86.32	112.11
CP 85–1491	115.44	116.60	104.32	101.32	123.46	108.23	114.78	86.23	112.02
CP 70–1133	113.55	120.05	99.22	98.14	129.75	105.21	110.83	84.58	110.96
CP 85–1343	140.24	113.69	96.00	86.05	123.74	101.71	112.73	71.39	110.59
CP 85–1207	116.78	112.06	98.86	95.22	127.04	110.97	112.34	84.82	110.47
Mean[3]	121.94	120.59	102.28	102.38	127.57	112.97	113.76	87.03	114.50
LSD (P=0.10)	11.90	12.29	8.79	10.51	7.66	6.97	5.64		4.49
C.V.[4]	8.14	8.49	7.17	8.55	5.00	5.14	4.13		6.85

[1]Chemical ripener applied prior to harvest.
[2]Stability-safety index for each clone is calculated at P = 0.10 by Eskridge's method and use of Shukla's stability variance parameter.
[3]LSD for location means = 4.61 kg of sugar per metric ton of cane at P = 0.10.
[4]C.V. = coefficient of variation.

Table 16.—Indicated yields of 96° sugar, in metric tons per hectare, from second-ratoon cane on Lauderhill, Pahokee, and Torry mucks

Clone	Mean yield by soil type, farm, and harvest date							Stability-safety index[1]	Mean yield, all farms
	Lauderhill muck			Pahokee muck			Torry muck		
	Okeelanta Corp. 11/1/91	Knight 11/25/91	Duda 12/26/91	New Farm 10/23/91	South Fla. Ind. 11/9/91	Wedgworth 2/12/92	Eastgate 3/19/92		
CP 85–1382	14.869	10.324	16.512	8.861	12.215	16.315	16.088	7.677	13.598
CP 85–1308	13.653	12.813	14.031	9.038	14.410	12.986	17.180	7.814	13.444
CP 85–1491	12.430	11.121	14.260	11.340	12.663	12.936	15.258	8.719	12.858
CP 85–1207	11.490	11.148	14.379	9.468	13.580	13.507	13.841	7.988	12.488
CP 70–1133	11.846	8.480	14.984	9.181	14.892	13.577	14.066	6.524	12.432
CP 85–1623	12.372	11.184	13.699	9.980	11.618	13.086	11.703	7.456	11.949
CP 85–1822	11.517	10.511	11.230	10.634	12.003	13.168	12.705	6.917	11.681
CP 85–1432	10.961	11.480	13.660	8.752	8.067	13.574	14.169	5.586	11.523
CP 85–1498	12.239	9.844	12.624	10.546	10.373	11.974	12.058	7.010	11.380
CP 85–1808	11.719	8.773	11.813	8.107	10.928	11.252	11.610	6.644	10.600
CP 72–1210	10.140	7.699	11.141	9.156	8.583	10.244	10.927	5.296	9.699
CP 85–1343	12.312	6.782	8.622	7.134	7.154	8.733	11.165	2.993	8.843
Mean[2]	12.129	10.013	13.080	9.350	11.374	12.613	13.398	6.719	11.708
LSD (P=0.10)	1.350	1.847	1.637	1.799	1.737	1.595	1.432		1.141
C.V.[3]	9.27	15.37	10.43	16.04	12.72	10.54	8.91		11.65

[1]Stability-safety index for each clone is calculated at P = 0.10 by Eskridge's method and use of Shukla's stability-variance parameter.
[2]LSD for location means = 0.763 t/ha at P = 0.10.
[3]C.V. = coefficient of variation.

Table 17.—Indicated yields of 96° sugar from preharvest samples of second-ratoon cane on Malabar sand and Pompano fine sand

Clone	Mean yield by soil type, farm, and sampling date				Mean yield by soil type, farm, and sampling date[1]			
	Malabar sand	Pompano fine sand			Malabar sand	Pompano fine sand		
	Hilliard Bros. 10/21/91	Lykes Bros. 10/28/91	Stability-safety index[2]	Mean yield, both farms	Hilliard Bros. 10/21/91	Lykes Bros. 10/28/91	Stability-safety index[2]	Mean yield, both farms
	kg per metric ton cane				metric tons per hectare			
CP 85–1382	123.43	112.16	97.19	117.79	12.484	16.444	10.817	14.464
CP 85–1308	116.98	121.02	119.00	119.00	11.216	15.382	9.468	13.299
CP 85–1491	100.70	115.90	92.42	108.30	10.213	13.044	8.672	11.629
CP 85–1823	119.16	110.30	97.57	114.73	11.830	10.759	5.668	11.295
CP 85–1498	114.08	113.86	109.89	113.97	9.955	12.168	8.169	11.062
CP 85–1432	94.44	106.07	89.57	100.25	8.942	12.623	7.361	10.783
CP 85–1822	90.97	112.18	77.12	101.57	9.394	12.127	7.831	10.761
CP 85–1207	105.89	119.98	98.65	112.93	8.678	12.355	7.098	10.517
CP 70–1133	109.24	112.40	110.82	110.82	9.773	11.128	7.233	10.451
CP 85–1808	105.21	112.67	104.86	108.94	7.996	11.328	6.477	9.662
CP 72–1210	103.05	98.55	89.96	100.80	7.861	10.194	6.143	9.028
CP 85–1343	121.91	113.36	100.92	117.63	7.484	6.718	1.837	7.101
Mean[3]	108.75	112.37	99.00	110.56	9.652	12.023	7.231	10.837
LSD (P=0.10)	23.17	16.83		13.48	3.364	2.772		2.205
C.V.[4]	11.86	8.34		10.20	19.41	12.84		15.84

[1]Yields based on early sucrose analysis, assuming that early cane yields are equal to actual yields at harvest.
[2]Stability-safety index for each clone is calculated at $P = 0.10$ by Eskridge's method and use of Shukla's stability-variance parameter.
[3]LSD's for location means = 11.08 kg of sugar per metric ton of cane and 0.796 metric tons sugar per hectare at $P = 0.10$.
[4]C.V. = coefficient of variation.

Table 18.—Harvest yields of cane and sugar from second-ratoon cane on Malabar sand and Pompano fine sand

Clone	Yields of cane: Mean yield by soil type, farm, and harvest date: Malabar sand: Hilliard Bros. 1/3/92	Pompano fine sand: Lykes Bros. 2/13/92	Stability-safety index[1]	Mean yield, both farms	Yields of 96° sugar: Mean yield by soil type, farm, and harvest date: Malabar sand: Hilliard Bros. 1/3/92	Pompano fine sand: Lykes Bros. 2/13/92	Stability-safety index[1]	Mean yield, both farms	Yields of 96° sugar: Mean yield by soil type, farm, and harvest date: Malabar sand: Hilliard Bros. 1/3/92	Pompano fine sand: Lykes Bros. 2/13/92	Stability-safety index[1]	Mean yield, both farms
	metric tons per hectare				kg per metric ton cane				metric tons per hectare			
CP 85–1382	89.78	137.30	45.01	113.54	125.18	122.86	117.59	124.02	11.075	16.853	5.772	13.964
CP 85–1308	99.32	121.73	80.40	110.52	118.75	124.92	111.88	121.83	11.800	15.201	9.057	13.501
CP 85–1822	97.95	109.38	75.16	103.67	125.62	125.82	125.72	125.72	12.273	13.794	9.314	13.034
CP 85–1432	97.24	114.76	78.65	106.00	118.15	120.01	119.08	119.08	11.466	13.810	9.034	12.638
CP 85–1823	97.78	101.60	63.57	99.69	125.24	126.51	125.87	125.87	12.255	12.864	7.977	12.560
CP 70–1133	93.64	105.48	71.29	99.56	115.45	117.42	116.43	116.43	10.899	12.361	7.875	11.630
CP 85–1207	87.81	99.22	64.99	93.51	123.44	123.74	123.59	123.59	10.784	12.279	7.797	11.532
CP 85–1498	83.65	97.06	62.79	90.36	128.04	120.97	108.49	124.50	10.736	11.756	7.128	11.246
CP 85–1491	96.70	105.33	70.34	101.01	107.82	113.49	101.71	110.66	10.415	11.977	7.499	11.196
CP 85–1808	76.35	95.30	57.98	85.82	125.57	127.54	126.55	126.55	9.589	12.206	7.170	10.898
CP 72–1210	73.16	95.23	54.36	84.20	117.95	117.12	114.33	117.54	8.615	11.188	6.199	9.902
CP 85–1343	64.86	65.80	25.19	65.33	114.08	117.63	111.32	115.85	7.372	7.735	2.649	7.554
Mean[2]	88.19	104.01	62.48	96.10	120.44	121.50	116.88	120.97	10.607	12.669	7.289	11.638
LSD (P=0.10)	14.99	13.84		15.21	9.11	6.36		4.50	1.747	1.951		1.858
C.V.[3]	14.17	11.09		12.51	6.31	4.36		5.41	13.73	12.84		

[1] Stability-safety index for each clone is calculated at $P = 0.10$ by Eskridge's method and use of Shukla's stability-variance parameter.

[2] LSD's for location means = 4.46 kg of sugar per metric ton of cane, 6.11 metric tons of cane per ha, and 0.987 metric tons of sugar per ha, at $P = 0.10$.

[3] C.V. = coefficient of variation.